Amendments to Claims:

This listing of claims will replace all prior revisions, and listings, of claims in the application:

Listing of Claims:

1-5. (Cancelled)

6. (Currently Amended) A method for actively controlling vibration including the steps of:

a. measuring ambient vibration;

b. generating a first command signal based upon said vibration measured in said step a;

c. constraining a first component of the first command signal;

d. calculating a residual vibration resulting from the constraint of the first component, wherein the residual vibration is calculated based upon the constraint; and

e. generating a second command signal based upon said residual vibration calculated in said step d.

7. (Original) The method of claim 6 further including the steps of:

f. activating a plurality of force generators based upon said constrained first component and said second command signal.

8. (Original) The method of claim 7 wherein said step c. further includes the step of comparing said first component of the first command signal to a maximum allowable command signal.

9. (Original) The method of claim 8 wherein said step c. further includes the step of reducing the first component to the maximum allowable command signal.

10. (Currently Amended) An active control system comprising:

a plurality of sensors for measuring ambient vibration;

a control unit generating a first command signal based upon said vibration measured by said plurality of sensors and based upon a matrix T, wherein T represents a relationship between a change in command signals and a resulting change in sensor measurements, constraining a first component of the first command signal, ~~calculating~~ performing a calculation based upon T to determine a residual vibration resulting from the constraint of the first component, the control unit ~~and~~ generating a second command signal based upon said calculated residual vibration; and

a plurality of force generators activated based upon said first command signal, said second command signal and said constrained first component.

11. (Original) The active control system of claim 10 wherein the control unit compares said first component of said first command signal to a maximum allowable command signal.

12. (Previously Presented) The active control system of claim 11 wherein the control unit

reduces the first component to not exceed the maximum allowable command signal.

13. (Currently Amended) A computer readable medium storing a computer program, which when executed by a computer performs the steps of:

a. generating a first command signal based upon measured vibration;

b. constraining a first component of the first command signal;

c. calculating a residual vibration resulting from the constraint of the first component, wherein the constraint of the first component of the first command signal is an input to the calculation; and

d. generating a second command signal based upon said residual vibration calculated in said step c.

14. (Original) The computer readable medium of claim 13 which when executed by a computer further performs the steps of:

e. activating a plurality of force generators based upon said first command signal, said constrained first component and said second command signal.

15. (Original) The computer readable medium of claim 13 which when executed by a computer said step b. further includes the step of comparing said first component of the first command signal to a maximum allowable command signal.

16. (Original) The computer readable medium of claim 15 wherein said step c) further includes the step of reducing the first component to the maximum allowable command signal.

17. (Currently Amended) A method for ~~reducing~~ actively controlling vibration ~~comprising~~ including the steps of:

a) sensing ambient vibration;

b) generating a first sensed signal as a function of the sensed ambient vibration;

c) generating a first control command signal as a function of the first sensed signal;

d) constraining a k_{th} component of the first control command signal;

e) calculating a residual ~~resulting~~ that is expected to result from the ~~application of the constrained~~ constraint of the k_{th} component, wherein the calculation is based upon the constraint of the k_{th} component;

f) generating a second control command signal in response to the residual calculated in step e); and

g) generating a compensating force as a function of the constrained k_{th} component and the second control command signal.

18. (Previously Presented) The method according to Claim 17, wherein said step d) further includes the steps of:

comparing components, including the k_{th} component, to a maximum threshold; and

scaling the k_{th} component by a constant based upon the k_{th} component exceeding the maximum threshold.

19. (Previously Presented) The method according to Claim 18 further including the steps of:

generating the constrained k_{th} component $(u_{i,k})_{new}$ in said step d), where $(u_{i,k})_{new} = Cu_{i,k}$ and $C = |(u_i)_k| / U_{max}$, and U_{max} is the maximum threshold;

calculating a change in the k_{th} component in the control command signals as a function of $\Delta u_{i,k}=(ui_{,k,})_{new} - u_{i-1,k}$; and

calculating the residual as a function of:

$(z_{i-1})_{new}=(z_{i-1})+T\ \Delta u_{i,k}$.

20. (Previously Presented) The method according to Claim 17 further including the steps of:

generating a controller weighting matrix;

generating a constrained control component ($W_{u,new\,k,k}$) as a function of:

$W_{u,new\,k,k} = W_{u\,k,k} + A$,

where A is a constant that greatly exceeds the magnitude of $W_{u\,k,k}$.

21. (Previously Presented) The method according to Claim 20, further including the steps of:

calculating a new command change ($\Delta u_{i,new}$) as a function of

$\Delta u_{i,new} = D_{new} (W_{u,new} u_{i-1} + T^T W_z (Z_{i-1})_{new})$ and where:

$D_{new} = -(T^T W_z T + W_{u,new} + W_{\Delta u})^{-1}$

22. (New) The method of claim 6 further including the steps of:

generating an ambient vibration signal representative of the ambient vibration measured in said step a. and storing said ambient vibration signal on a computer; and

storing a matrix T on the computer, the matrix T representing a relationship between a change in command signals and a resulting change in measured ambient vibration, the generation of the first command signal in said step b. based upon the matrix T, the calculation of the residual vibration in said step d. based upon the matrix T.

23. (New) The method of claim 17 wherein the constraint of the k_{th} component is an input to the calculation of the residual in said step e).